UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,218	09/21/2001	Ralph N. Crabtree	BRCK-001/01US	5873

22903 7590 07/25/2006

COOLEY GODWARD LLP
ATTN: PATENT GROUP
THE BOWEN BUILDING
875 15TH STREET, N.W. SUITE 800
WASHINGTON, DC 20005-2221

EXAMINER	
REKSTAD, ERICK J	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/960,218	CRABTREE ET AL.	
	Examiner	Art Unit	
	Erick Rekstad	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This is an Office Action for application 09/960,218 in response to the RCE filed on May 11, 2006 wherein claims 7-26 are presented for examination.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 11, 2006 has been entered.

Allowable Subject Matter

The indicated allowability of claims 20-25 is withdrawn in view of the newly discovered reference(s) to Kennedy et al. Rejections based on the newly cited reference(s) follow.

Response to Arguments

Applicant's arguments with respect to claims 7-19 and 26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 7 is objected to because of the following informalities: On line 6 of claim 7, the claim states "spatial value and a true value" this should state "spatial value and a time value". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7, 8, 17-22 and 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,491,645 to Kennedy et al.

[claim 7]

Kennedy teaches a program run by a central processing unit (Col 4 Lines 15-23) in order to cause the processor to:

Analyze information used to define a first path, the information used to define the first path including a plurality of data elements, each data element from the plurality of data elements associated with the first path including a spatial value and a time value, each spatial value associated with the first path indicating a position of an object associated with the first path at a time associated with the corresponding time value (Col 4 Lines 41-49 and Lines 56-62, Col 5 Lines 15-23, Figs. 1A and 1B).

Analyze information used to define a second path, the information used to define the second path including a second plurality of data elements each data element from said second plurality of data elements associated with the second path including a spatial value and a time value, each spatial value associated with the second path indicating a position of an object associated with the second path at a time associated with the corresponding time value, the spatial value used to define the second path

including spatial values not included in the information used to define the first path (Col 5 Lines 24-40, Fig. 1A); and

Determine, at least partially based on the analysis of the information used to define the first path and the analysis of the information used to define the second path, if the object associated with the first path and the object associated with the second path are the same object (Col 5 Lines 41-48, Col 6 Lines 26-58).

[claim 8]

Kennedy further teaches output information used to define a third path, if it is determined that the object associated with the first path and the object associated with the second path are the same object, the information used to define the third path including the plurality of spatial values used to define the first path and at least a portion of the plurality of spatial values used to define the second path thereby creating a path representing a limiting of the first and second paths (Col 2 Lines 20-27, Col 5 Lines 41-48).

[claim 17]

Kennedy further teaches the use of instructions to cause a processor to determine a confidence value that the object associated with the first path and the object associated with the second path are the same object the code representing instructions to cause a processor to determine if the object associated with the first path and the object associated with the second path are the same object being configured to make a determination at least partially based on the confidence value (Col 8 Lines 39-53).

[claim 18]

Kennedy further teaches the use of instructions to cause a processor to determine if the object associated with the first path and the object associated with the second path are the same object includes instructions to determine at least whether an end spatial value of the first path is within a predetermined distance of a start spatial value of the second path, an end spatial value of the first path having a corresponding time value that is chronologically last of all time values uniquely associated with the plurality of spatial values used to define the first path, a start spatial value of the second path having a corresponding time value that is chronologically first of all time values uniquely associated with the plurality of spatial values used to define the second path (Col 7 Lines 1-30, Col 9 Lines 36-60, Fig. 1C)

[claim 19]

Kennedy further teaches the use of instructions to cause a processor to determine if the object associated with the first path and the object associated with the second path are the same object includes instructions to determine at least whether a time value corresponding to an end spatial value of the first path is within a predetermined time of a time value corresponding to a start spatial value of the second path, the end spatial value of the first path having a corresponding time value that is chronologically last of all time values uniquely associated with the plurality of spatial values used to define the first path, the start spatial value of the second path having a corresponding time value that is chronologically first of all time values uniquely

associated with the plurality of spatial values used to define the second path (Col 7 Lines 1-16).

[claim 20]

Kennedy teaches a program run by a central processing unit (Col 4 Lines 15-23) in order to cause the processor to:

Receive information associated with a plurality of paths, each path from the plurality of paths representing movement of an object defined over time (Col 4 Lines 30-40, Col 5 Lines 21-23);

Iteratively determine, for each path from the plurality of paths, whether that path can be linked to another path from the plurality of paths at least partially based on predetermined linking rules (Col 2 Lines 60-67; Figs. 3A and 3B)

Resolve conflicts associated with linking a path to another path based on predetermined conflict-resolution rules, if any conflicts exits (Col 5 Line 60-Col 6 Line13).

[claim 21]

Kennedy further teaches the instructions are configured to remove paths within larger paths (Col 5 Line 63-Col 6 Line 5). Note: observation points are removed from remaining tracks when a track containing the observation points is correlated with a base track.

[claim 22]

Kennedy further teaches wherein each path from the plurality of paths includes a plurality of data elements, each data element from the plurality of data elements

associated with a path from the plurality of paths including a spatial value and a time value, the code representing instructions to cause a processor to iteratively determine being configured to extract and store at least one data element associated with each path from the plurality of paths, the at least one data element including at least one of a start spatial value, an end spatial value, a length between a start value and an end spatial value (Col 5 Lines 15-27, Col 7 Lines 1-29). Note: The start and end times are used to determine the time gap.

[claims 24 and 25]

As shown above, Kennedy teaches each path from the plurality of paths includes a plurality of data elements, each data element from the plurality of data elements associated with a path from the plurality of paths including a spatial value and a time value (Col 6 Lines 26-28). Kennedy further teaches the code representing instructions is configured to determine if a distance between an end spatial value of a first path from the plurality of paths and a start spatial value of a second path from the plurality of paths is within a predetermined threshold (Col 7 Lines 1-5 and Lines 31-32, Fig. 1C and 1D). Note: the instructions use only paths that are contained in the same satellite field for one test and only paths that are not contained in the same satellite field in another test. Kennedy further teaches the code determines if a time between an end time value of a first path from the plurality of paths and a start time value of a second path from the plurality of paths is within a predetermined threshold as required by claim 25 (Col 7 Lines 8-15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al.

[claim 9]

Kennedy teaches the correlating of the paths in order to produce a final track using methods well known in the art (Col 5 Lines 41-48). Kennedy further teaches one test for determining correlation is when the first path and second path have three common points (Col 6 Lines 35-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the paths of Kennedy using the method of using the points of the first path and the non-duplicate points of the second path in order to produce a final track as this method is well known in the art (Official Notice).

[claim 23]

Kennedy teaches the comparing of base tracks which have an early start time with result tracks which have a later start time (Col 4 Lines 41-49). The first test is to determine the tracks which overlap (start time of result track is less then the end time of the base track and points coincide) (Col 6 Lines 28-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the task using a sorted result path list in order of start times and a sorted base path list in order of end

times as it is well known that a path that ends near the same time that another path begins are most likely to be the same path (Official Notice).

Claims 10, 12 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy as applied to claim 7 above, and further in view of US Patent 5,959,529 to Kail and 'Automatic Tracking of Human Motion in Indoor Scenes Across Multiple Synchronized Video streams' by Cai et al.

[claim 10]

As shown above, Kennedy teaches the requirements of claim 7. Kennedy further teaches the method used by a system comprising satellites and infrared sensors (Col 3 Lines 51-60, Col 5 Lines 17-19). Kennedy does not teach the use of the method using video images.

Kail teaches the use of satellites containing high resolution cameras and infrared sensors (8-16). Kail does not teach the use of the cameras for tracking.

Cai teaches the use of cameras in order to find objects in an image and track the objects (Abstract, Section 2.1-2.2 and 3).

It would have been obvious to one of ordinary skill in the art to combine the use of cameras to track objects as taught by Cai with the system of Kennedy because it is well known in the art that satellites may contain infrared sensors and cameras as taught by Kail.

[claim 12]

As shown above for claim 7, Kennedy teaches the information used to define the first and second paths are spatial values obtained from the area viewable by the

satellites (Col 5 Lines 15-26 and Col 6 Lines 26-29). Kennedy does not teach the obtaining of the spatial values using images.

Kail teaches the use of satellites containing high resolution cameras and infrared sensors (8-16). Kail does not teach the use of the cameras for tracking.

Cai teaches the use of cameras in order to find objects in an image and track the objects (Abstract, Section 2.1-2.2 and 3). Cai specifically teaches the obtaining of the location of the object (Section 2.1.3 First Paragraph).

It would have been obvious to one of ordinary skill in the art to combine the use of cameras to track objects as taught by Cai with the system of Kennedy because it is well known in the art that satellites may contain infrared sensors and cameras as taught by Kail.

[claim 26]

As shown above for claim 7, Kennedy teaches the method of extracting a plurality of sets of spatial values and corresponding time values used to define paths of objects (Col 4 Lines 41-49 and Lines 56-62, Col 5 Lines 15-23, Figs. 1A and 1B). Theses paths are compared to determine if they are the same object (Col 5 Lines 41-48, Col 6 Lines 26-58). Kennedy teaches each satellite are associated with physical areas (11-13) (Col 4 Lines 62-65, Fig. 1B). Kennedy further teaches the use of an apparatus to perform the method (Fig. 2). Kennedy does not teach the use of image capture devices.

Kail teaches the use of satellites containing high resolution cameras and infrared sensors (8-16). Kail does not teach the use of the cameras for tracking.

Cai teaches the use of cameras in order to find objects in an image and track the objects (Abstract, Section 2.1-2.2 and 3).

It would have been obvious to one of ordinary skill in the art to combine the use of cameras to track objects as taught by Cai with the system of Kennedy because it is well known in the art that satellites may contain infrared sensors and cameras as taught by Kail.

Claims 11, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy, Kail and Cai as applied to claim 10 above, and further in view of US Patent 6,359,647 to Sengupta et al.

[claim 11]

As shown above for claim 10, Kennedy, Kail and Cai teach the use of cameras to obtain the path information. Cai further teaches converting the different camera coordinates into the same coordinate system in order to track the object between cameras (Section 3). Cai does not teach the coordinate system being that of a real world coordinate system.

Sengupta teaches the coordinate system can be that of the actual dimensions relative to a reference such as the floor plan in order to provide a means for automatically switching cameras (Col 4 Lines 35-67, Col 5 Lines 37-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the real world coordinate system of Sengupta in the tracking system of Kennedy, Kail and Cai in order to provide a means for automatically switching cameras.

[claims 15 and 16]

As shown above for claim 10, Kennedy, Kail and Cai teach the use of cameras to obtain the path information. Kennedy, Kail and Cai do not specifically teach the process of analyzing a relationship between the first path and a region of interest, the region of interest being one of an exclusion region, a break region, and a warping region.

Sengupta teaches the use of a method of determining the relationship between the first path and a region of interest, the region of interest being one of an exclusion region, a break region, and a warping region in order to determine the camera to switch to (Col 4 Lines 27-67, Figs. 3a-3c). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the tracking system of Kennedy, Kail and Cai with the controller method of Sengupta in order to determine the camera to switch to.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy, Kail and Cai as applied to claim 12 above, and further in view of US Patent 6,816,186 to Luke et al.

[claim 13]

Cai further teaches the use of 3D points to conduct spatial-temporal matching of an image point (Section 3.1.2). This provides the ability to track the subject of interest across the views of multiple pre-calibrated fixed cameras (Section 3). Cai does not specifically teach the use of converting each spatial value to a spatial value with in a universal coordinate system.

Luke teaches the use of converting the spatial values into universal coordinates system in order to determine the location of the object in relation to a monitored area. This removes the false-alarms that might be generated by 2D systems (Col 5 Lines 8-65, Fig. 9). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the tracking method of Kennedy, Kail and Cai with the 3D coordinate method of Luke in order to determine the location of the object in relation to a monitored area.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy, Kail and Cai as applied to claim 12 above, and further in view of US Patent 5,570,096 to Knight.

[claim 14]

As shown above, Kennedy, Kail and Cai teach the method of claim 12. Kennedy further teaches the use of satellites (Abstract). Kennedy, Kail, and Cai do not teach the conversion of each time value to a time value within the universal coordinate system.

Knight teaches the use of a universal time in order to accurately obtain position and velocity data related to satellites in order to properly provided location data of detected objects (Abstract, Col 4 Lines 45-54).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the universal time of Knight in order properly determine the position of the object to be tracked in the method of Kennedy, Kail and Cai.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,404,455 to Ito et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 571-272-7338. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erick Rekstad
Examiner
AU 2621

GIMS PHILIPPE
PRIMARY EXAMINER

(571) 272-7338
erick.rekstad@uspto.gov